

WHAT IS CLAIMED IS:

1. A navigation apparatus for providing navigation services, comprising:

5 a platform block provided with hardware of the navigation apparatus and basic functions for controlling the hardware;

a navigation application processing block for providing navigation services using the  
10 basic functions provided in said platform block;  
and

an optional application processing block for providing optional services using any of the navigation services based on information acquired  
15 using the basic functions of said platform block, by communicating with said navigation application processing block.

2. The navigation apparatus according to  
20 claim 1, wherein said optional application processing block is an application executed on a virtual platform and is independent of said platform block.

25 3. The navigation apparatus according to  
claim 1, wherein said optional application processing block is a Java application executed on a Java virtual machine, and

30 said navigation application processing block communicates with said optional application

processing block in accordance with Java native interface.

4. The navigation apparatus according to  
5 claim 1, wherein said navigation application processing block communicates with said optional application processing block using socket communication.

10 5. A computable readable recording medium storing programs for controlling a computer to operate as a navigation apparatus providing navigation services, the programs allowing a computer to operate as:

15 a platform block provided with basic functions for controlling hardware of the navigation apparatus;

20 a navigation application processing block for providing navigation services using the basic functions of the platform block; and

25 an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions of said platform block, by communicating with said navigation application processing block.

6. A navigation apparatus for providing navigation services, comprising:

30 a platform block provided with hardware

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of the navigation apparatus and basic functions for controlling the hardware;

5       a navigation application processing block for providing navigation services using the basic functions provided in said platform block;

      an optional application processing block for providing optional services using any of the navigation services based on information acquired using the basic functions of said platform block;

10      and

      an interface processing block for communicating with said optional application processing block and said navigation application processing block so as to enable any of the optional services to be executed.

7. The navigation apparatus according to claim 6, wherein said optional application processing block is executed on a virtual platform  
20      and is independent of said platform.

8. The navigation apparatus according to claim 6, wherein said optional application processing block is a Java application executed on a Java virtual machine.  
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9. The navigation apparatus according to claim 6, wherein said interface application block is a Java application executed on a Java virtual  
30      machine.

10. The navigation apparatus according  
to claim 9, wherein said interface application  
block is provided with one of a method for  
5 exchanging data with said optional application  
processing block and a member variable in which  
said optional application processing block reads  
and writes data, and one of a method for exchanging  
data with said navigation application processing  
10 block and a member variable in which said  
navigation application processing block reads and  
writes data.

11. The navigation apparatus according  
15 to claim 6, wherein said navigation application  
processing block executes any of the navigation  
services in accordance with navigation control data  
supplied from said optional application processing  
block via said interface processing block and  
20 supplies navigation information data including an  
interim result or an execution result to said  
optional application processing block via said  
interface processing block.

25 12. The navigation apparatus according  
to claim 11, wherein said interface processing  
block generates, when it is determined that the  
navigation control data from said optional  
application processing block is composite  
30 navigation control data, plural navigation control

data sets from the composite navigation control data and supplies the plural navigation control data sets to said navigation application processing block.

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13. The navigation apparatus according to claim 6, wherein said interface processing block communicates with said optional application processing block using socket communication or Java  
10 RMI.

14. The navigation apparatus according to claim 6, wherein said interface processing block communicates with said navigation application  
15 processing block using socket communication.

15. The navigation apparatus according to claim 6, wherein said interface processing block acquires a remote optional application processing  
20 block from an external source using the basic functions of said platform block.

16. The navigation apparatus according to claim 15, wherein said interface processing  
25 block acquires the remote optional application processing block from the external source only when a communication service used by the remote optional application processing block is available for use.

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17. The navigation apparatus according

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to claim 15, wherein said interface processing block displays a menu of remote optional application processing blocks using the basic functions of said platform block, adds to the menu 5 the remote optional application processing block when the remote optional application processing block is acquired from the external source and starts the acquired remote optional application processing block when selected from the menu.

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18. The navigation apparatus according to claim 6, wherein said optional application processing block supplies a request for required communication services to said interface processing 15 block, and  
said interface processing block dynamically starts the requested communication services upon receipt of the request.

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19. The navigation apparatus according to claim 18, wherein said interface processing block acquires a module for executing the requested communication services corresponding to the request when the module is not available.

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20. The navigation apparatus according to claim 6, wherein said optional application processing block provides collection and delivery information services using any of the navigation 30 services, based on information acquired from a

predetermined center using the basic functions of said platform block.